(No Model.) 2 Sheets—Sheet 1.

F. I. PALMER.

VESSEL FOR HARBOR AND COAST DEFENSE.

No. 372,761. Patented Nov. 8, 1887.

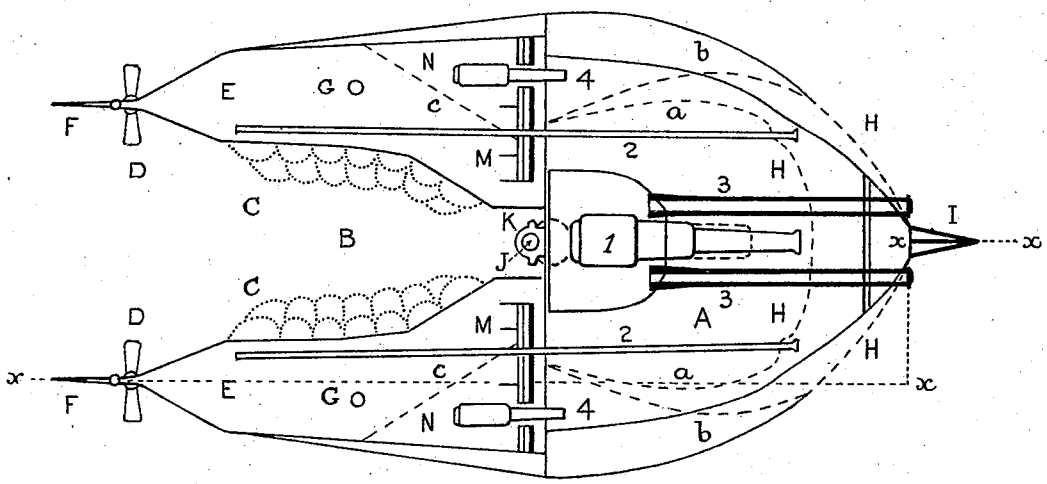


Fig 1

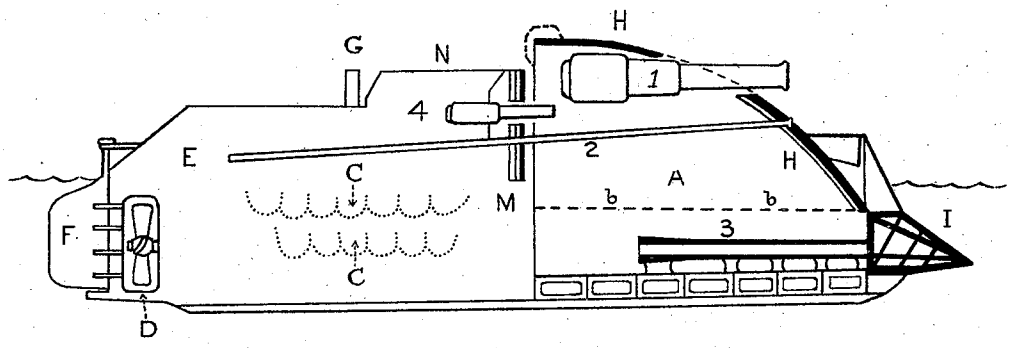


Fig 2

WITNESSES:
George A. Voss.
John L. Adams

INVENTOR
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(No Model.) 2 Sheets—Sheet 2.

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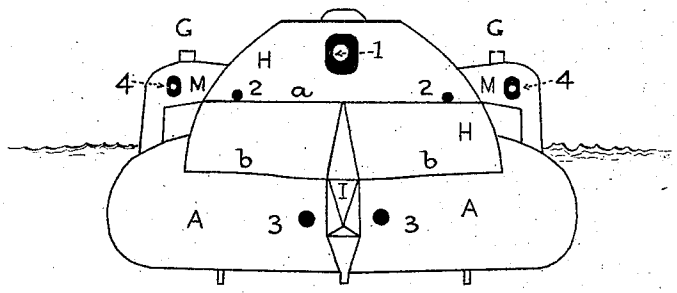


Fig 3

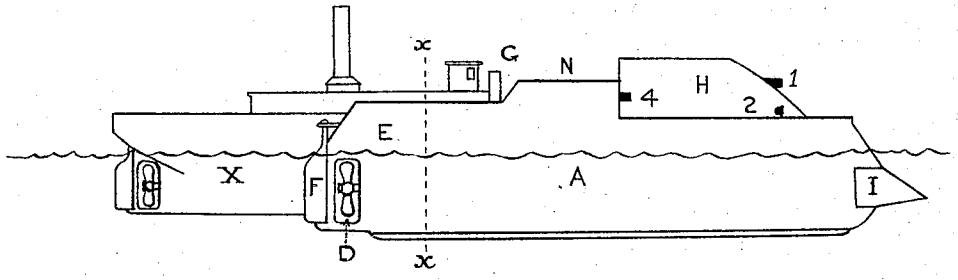


Fig 4

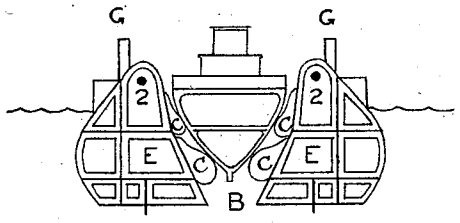


Fig 5

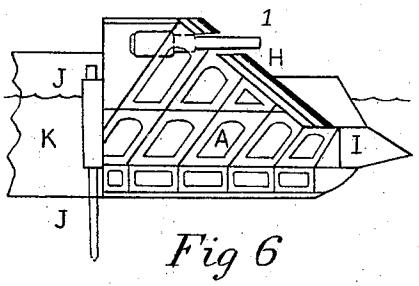


Fig 6

WITNESSES:

George A. Voss.

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UNITED STATES PATENT OFFICE.

FRANCIS I. PALMER, OF NEW YORK, N. Y.

VESSEL FOR HARBOR AND COAST DEFENSE.

SPECIFICATION forming part of Letters Patent No. 372,761, dated November 8, 1887.

Application filed January 24, 1887. Serial No. 225,415. (No model.)

To all whom it may concern:

Be it known that I, FRANCIS I. PALMER, civil engineer, of the city, county, and State of New York, have invented a new and useful Improvement in Harbor and Coast Defense Vessels, of which the following is a full, clear, and exact description.

My invention relates to improvements in the construction and arrangement of floating batteries or gunboats, designed especially for harbor and river defense, although also adapted for use on the coast and on the great lakes.

In the drawings the same reference-letters indicate the same parts in all the figures, and in these I have not undertaken to give the details of construction of the battery, engines, armament, or armor, because such details form no part of my invention, which, however, does consist in the general plan of construction of the battery, whereby I am enabled to produce an exceedingly efficient and powerful agent of defense at relatively small cost, and embodying many elements of advantage not possessed by other structures of its class, because in my battery I combine great strength, reduced weight relative to efficiency and armament carried, considerable speed, light draft, steady platform, and am enabled to carry heavy guns and guns requiring much space, which can be brought to bear on the enemy without broad training and with unusual celerity, considering their dimensions and weight.

In the drawings, Figure 1 illustrates a top view of the battery, parts of the armor and parts of the decks having been removed. Fig. 2 illustrates a vertical section on the line *x x x x* of Fig. 1, the main armor, however, being sectioned on the median line of the battery. Fig. 3 illustrates a front or bow view showing the battery as it ordinarily would lie facing an enemy. Fig. 4 illustrates a side view showing the battery and steam-tug combined. Fig. 5 illustrates a vertical cross-section taken through the forward part of the steam-tug and battery on about the line *x x* of Fig. 4. Fig. 6 illustrates a vertical longitudinal view, partly in section, showing the arrangement of the spud and the main armor, composed of straight plates set at an incline instead of on double curves, as shown in Figs. 1 and 2. This figure shows only the forward part of the battery.

A is the hull of the battery. It may be made of such material as is preferred and be strengthened as desired. I prefer to make it mostly of iron or steel, for reasons well understood by constructers of naval vessels.

B is a recess made in the hull from the stern running forward, which conforms to the general outline of the bow of an ordinary propeller-tug.

C are buffers, made of cork cushions, rubber air-cushions, or equivalent materials, which may be permanently attached to the inner surfaces of the recess B; but I prefer to make them easy of removal when not required for active service, so that they will not become deteriorated by long submersion. There may be one or more rows of these cushions, or they may be made as a continuous lining for the recess B, resembling mattresses. Their function is to act as a padding or buffer to secure freedom from shock between the steam-tug and the battery, as hereinafter set forth.

D D are two propellers at the respective sterns of the projecting portions of the battery, (marked E E.) These propellers are driven by suitable engines, preferably placed in the projecting portions E E, the engines and their boilers or such other motive power as may be employed, both for the battery and dynamite guns, being located as far as practicable below the water-line, to secure the greatest amount of safety.

F F are rudders at the ends of the projecting portions or sterns E E.

G G are the smoke-stacks for the furnaces of the boilers.

H is a heavy armor-shield, preferably of cast metal, although steel plates or composite armor or other suitable plating may be employed. It is preferably made curvilinear in all directions, and extends from below the water-line at the bow to and over the main gun in the battery, (marked 1,) also protecting the other guns of the armament. The dotted lines in Fig. 1 show the outline of the main armor, the line-mark *a* shows the deck-line, and the line *b* shows the lower edge of the armor. The rearmost line of the bomb-proof roof N for

the smaller side guns is also shown at *c c*, Fig. 1.

I is a ramming bow or spur, which is preferably of the class known as "detachable," so arranged that after it has rammed a vessel the battery may be backed away and leave this spur, if necessary, in the hull of the vessel rammed. This spur is very strongly built, is thoroughly braced, and, if desired, may carry a dynamite or other explosive bomb, to be fired at the desired time by electricity or otherwise. Its construction whereby detachability is insured may be similar to any of the methods now employed in such structures.

J is a spud or spile, which is located at about the center of the battery, preferably at the forward end of the recess B, as shown. When in use for anchoring purposes, its upper part is inclosed in a suitable collar or ring-like frame, K, (see Figs. 1 and 6,) and around this point the battery can be readily made to revolve. This spile may be a suitably-prepared stick of timber, preferably having its lower end metal shod, or it may be made of metal in tubular form, or otherwise, as desired, and would be driven into mud and sand bottoms by the aid of water or steam jets or other power.

M M are supplemental armor-plates, which may be set vertically, as shown, or at an angle, as preferred. They are placed on the quarters of the battery in the best position in conjunction with the main armor-shield to protect any machinery that may be placed in the two sterns E E and the deck and machine guns of smaller caliber. These lighter guns are protected or roofed over with light armor-plating N.

The operation for ordinary propulsion of the battery is as follows: I rely on the propellers D D, by which I can attain a useful speed; but when desired to obtain greater speed, and also when it is anticipated that the enemy may be rammed, I use an ordinary steam-tug, X, Fig. 4, in conjunction with the battery. The tug is run into the space B until it fits snugly within the lining-buffers C C, and is held there by means of ropes, chains, or other fastenings attached to suitably-located bitts or bollards on the battery and tug. Thus the tug becomes practically an integral part of the battery, and by its use, plus the propellers of the battery, I am enabled to secure a very considerable speed, maneuvering and ramming power.

When the battery has reached the desired place of its operations, which, by preference, should be in comparatively shoal water, and, if possible, behind some protecting rampart—such as a sand-spit, (Sandy Hook, for instance,) a breakwater, island, or other like protection that may happen to be convenient and accessible—the spud J may then be lowered and driven into the bottom by a steam or water jet or other suitable driving apparatus. The spud, when used, acts as an anchor to retain the battery stationary, and also as an axis around which it may be rapidly and surely swung by the proper operation of the propellers, with or without the tug X. In this way the battery can always be readily maintained bow onto the enemy, and the laying of the guns is principally secured by this swinging of the battery, although they doubtless would have independent fine training appliances. Thus it is never necessary to train or swivel the guns across the battery, whereby a very great saving in the expense of construction is effected.

When desirous to change the location of the battery for any purpose, the spud may be readily lifted and the battery propelled wherever wanted. Of course the spud will not always be desired, and sometimes not available, because of unsuitable bottom, deep water, &c.; but its employment at times will be most valuable. Moreover, an anchor of the ordinary shape, but preferably of the mushroom pattern, may be employed to hold the battery, around which it may be swung by her propellers or by quarter hauling lines.

Having described my invention, I claim—

1. The above-described floating battery having propellers D D, tug-recess B, located in the stern of the battery and between the projecting parts E E, buffers or cushions C C, attached to the walls of the tug-recess B, armor for the protection of the guns, and spud J, substantially as set forth.

2. The above-described floating battery having propellers D D, tug-recess B, located in the stern of the battery between the projecting parts E E, buffers or cushions C C, attached to the walls of the tug-recess B, and armor for the protection of the guns, substantially as set forth.

FRANCIS I. PALMER.

Witnesses:

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J. L. BUTTERLY.